

Attorney Docket No.: 7913ZAZY

Serial No.: 08/236,933

Amendments to the claims

Please amend claims 45, 55, 57, 59-61, 82, 96, 211, 215, 217-220, 224, 230, 232-233, 239, 243, 245, and 248 as follows. This listing of claims will replace all prior versions and listings of claims in the application.

1-44. (Cancelled).

45. (Currently Amended) A process for preparing C_{60} comprising:

(a) vaporizing elemental carbon in the presence of an inert quenching gas under conditions effective to form a sooty carbon product comprising C_{60} molecules, said C_{60} molecules being present in said sooty carbon product in amounts capable of extracting therefrom said C_{60} in macroscopic amounts ~~and in solid form~~; and

(b) extracting C_{60} in macroscopic amounts from said sooty carbon product.

46. (Cancelled).

47. (Previously Presented) The process according to Claim 45 wherein said extracted C_{60} is in solution.

48. (Previously Presented) The process according to Claim 47 wherein said extracted C_{60} is in solution of a non-polar organic solvent.

49. (Previously Presented) The process according to Claim 48 wherein the non-polar organic solvent is benzene, toluene, carbon tetrachloride, 1,1,1-trichloroethane, xylene or alkanes having 5-10 carbon atoms.

50. (Cancelled).

51. (Previously Presented) The process according to Claim 232 wherein said extracted C_{60} is in solid form.

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52. (Previously Presented) The process according to Claim 232 wherein said extracted C₆₀ is in solution.

53. (Previously Presented) The process according to Claim 52 wherein said extracted C₆₀ is in solution of a non-polar organic solvent.

54. (Previously Presented) The process according to Claim 53 wherein said non-polar organic solvent is benzene, toluene, carbon tetrachloride, 1,1,1-trichloroethane, xylene or alkanes having 5-10 carbon atoms.

55. (Currently Amended) The process according to Claim ~~46~~ or 51 wherein the C₆₀ in solid form is a crystalline solid.

56. (Cancelled).

57. (Currently Amended) The process of Claim ~~55~~ 51 wherein the C₆₀ in solid form is ~~substantially pure~~ purified crystalline C₆₀.

58. (Previously Presented) The process of Claim 45 or 232 wherein C₇₀ is additionally present in the sooty carbon product and is additionally extracted therefrom.

59. (Currently Amended) The process of Claim 45 or 232 wherein C₇₀ is additionally present in the sooty carbon product and is separated from the C₆₀.

60. (Currently Amended) The process of Claim 59 wherein the C₇₀ separated from said C₆₀ is ~~substantially pure~~ purified solid C₇₀.

61. (Currently Amended) The process of Claim 60 wherein the ~~substantially pure~~ purified solid C₇₀ is ~~substantially pure~~ purified crystalline C₇₀.

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62. (Previously Presented) The process according to Claim 45 or 232 wherein extracting comprises contacting the sooty carbon product with a non-polar organic solvent effective to dissolve the C₆₀, said solvent being present in amounts sufficient to dissolve the C₆₀ present in said sooty carbon product.

63. (Previously Presented) The process according to Claim 62 wherein extracting further comprises separating from said solvent a solid C₆₀.

64. (Previously Presented) The process of Claim 45 or 232 wherein extracting comprises subliming the C₆₀ from the sooty carbon product and condensing the sublimed C₆₀.

65. (Previously Presented) The process of Claim 232 wherein depositing comprises collecting the sooty carbon product on a collecting surface distanced 5-10 cm from said vaporization.

66. (Previously Presented) The process of Claim 45 or 232 wherein the elemental carbon is placed into an evacuated reactor prior to the vaporization thereof.

67. (Previously Presented) The process of Claim 45 or 232 wherein the elemental carbon is vaporized in a bell jar carbon evaporator.

68. (Previously Presented) The process of Claim 45 or 232 wherein the elemental carbon subject to vaporization is graphite, or amorphous or glassy carbon.

69. (Previously Presented) The process of Claim 68 wherein the elemental carbon subject to vaporization is graphite.

70. (Previously Presented) The process of Claim 45 or 232 wherein the elemental carbon subject to vaporization is graphite rods.

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71. (Previously Presented) The process of Claim 45 or 232 wherein the elemental carbon is vaporized by passing an electrical current of sufficient intensity through said carbon source to produce the sooty carbon product.

72. (Previously Presented) The process of Claim 71 wherein the electrical current is about 100 amps.

73. (Previously Presented) The process of Claim 45 or 232 wherein the inert quenching gas is a noble gas.

74. (Previously Presented) The process of Claim 73 wherein the noble gas is helium or argon.

75. (Previously Presented) The process of Claim 232 wherein the collecting surface is a glass surface.

76. (Previously Presented) The process of Claim 62 wherein the non-polar organic solvent is carbon disulfide, benzene, carbon tetrachloride or toluene.

77. (Previously Presented) The process of Claim 76 wherein the solvent is benzene.

78. (Previously Presented) The process of Claim 63 wherein separating the solid C₆₀ from the solvent comprises evaporating the solvent.

79. (Previously Presented) The process of Claim 63 further comprising the step of purifying the solid C₆₀.

80. (Previously Presented) The process of Claim 79 wherein the purifying step is sublimation, crystallization, column chromatography, capillary electrophoresis, HPLC, preparative thin-layer chromatography or extraction.

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81. (Previously Presented) The process of Claim 64 wherein the C₆₀ is sublimed from the sooty carbon product at 300-400°C.

82. (Currently Amended) The process of Claim 64 wherein ~~the sublimation step~~ subliming comprising heating the C₆₀ in a vacuum or inert atmosphere at effective sublimation temperatures to extract C₆₀ from said sooty carbon product.

83-95. (Cancelled).

96. (Currently Amended) The process of Claim 232 wherein ~~the depositing step~~ comprises collecting the sooty carbon product on a said collecting surface distanced 5-10 cm from said vaporization.

97-180 (Cancelled).

181. (Previously Presented) A process for preparing C₆₀ comprising:

(a) vaporizing elemental carbon in the presence of an inert quenching gas under conditions effective to form a sooty carbon product comprising C₆₀ molecules, said C₆₀ molecules being present in said sooty carbon product in amounts capable of extracting therefrom said C₆₀ in solid form; and

(b) extracting in solid form C₆₀ from said sooty carbon product.

182-202. (Cancelled).

203. (Previously Presented) The process according to Claim 62 wherein extracting further comprises evaporating the solvent off, thereby forming a residue, and subliming the C₆₀ from said residue.

204. (Previously Presented) A process for preparing C₆₀ comprising

(a) vaporizing elemental carbon in the presence of an inert quenching gas at a pressure sufficient to generate a sooty carbon product comprising C₆₀, said C₆₀ being present

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in said sooty carbon product in sufficient amounts to produce and collect therefrom crystalline C_{60} ;

(b) separating said C_{60} from said sooty carbon product under conditions effective to recover crystalline C_{60} .

205. (Previously Presented) The process according to Claim 204 wherein the pressure is less than 1 atmosphere.

206. (Previously Presented) The process according to Claim 205 wherein the pressure is at least about 50 torr.

207. (Previously Presented) The process according to Claim 206 wherein the pressure ranges from about 50 to about 400 torr.

208. (Previously Presented) The process according to Claim 204 wherein C_{70} is additionally present in the sooty carbon product.

209. (Previously Presented) The process of Claim 204 wherein C_{70} is additionally present in the sooty carbon product and is separated from the sooty carbon product and is additionally present in the crystalline C_{60} .

210. (Previously Presented) The process according to Claim 209 wherein said C_{70} is separated from the crystalline C_{60} .

211. (Currently Amended) The process according to Claim 204 wherein said crystalline C_{60} is ~~substantially pure~~ purified crystalline C_{60} .

212. (Previously Presented) The process according to Claim 204 wherein the elemental carbon is graphite, amorphous carbon or glassy carbon.

213. (Previously Presented) A process for preparing C_{60} comprising:

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(a) vaporizing elemental carbon to form carbon vapor in an atmosphere of an inert gas;

(b) quenching said carbon vapor in said inert gas under conditions sufficient to effectively condense and nucleate said vapor to form a sooty carbon product comprising C_{60} molecules in sufficient quantities to extract therefrom an amount sufficient to collect said C_{60} as a crystalline product;

(c) collecting said sooty carbon product;

(d) separating said C_{60} from said sooty carbon product and recovering therefrom said C_{60} in crystalline form.

214. (Previously Presented) The process according to Claim 213 wherein the inert gas is helium or argon.

215. (Currently Amended) The process according to Claim 213 wherein the carbon vapor is quenched ~~for~~ at a sufficient distance from ~~the~~ situs of vaporization to form said sooty carbon product.

216. (Previously Presented) The process according to Claim 215 wherein said distance is about 5 to 10 cm from the situs of vaporization.

217. (Currently Amended) The process according to Claim 213 wherein the C_{60} recovered therefrom is ~~substantially pure~~ purified crystalline C_{60} .

218. (Currently Amended) The process according to Claim 213 wherein C_{70} is additionally present in the sooty carbon product ~~and is additionally present in the sooty carbon product~~ and is additionally present in the crystalline product.

219. (Currently Amended) The process according to Claim ~~213~~ 218 wherein the C_{60} is separated from C_{70} .

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220. (Currently Amended) The process according to Claims 213 wherein the ~~quenching~~ inert gas is at a pressure less than 1 atmosphere.

221. (Previously Presented) The process according to claim 220 wherein the pressure ranges from about 50 torr to about 400 torr.

222. (Previously Presented) A process for producing C_{60} comprising:

(a) vaporizing elemental carbon in an atmosphere of an inert gas at a pressure sufficient to generate a sooty carbon product comprising C_{60} ; said C_{60} being present in sufficient quantities to recover therefrom C_{60} in amounts to be discernible as a colored solid;

(b) separating said C_{60} from said sooty carbon product under conditions effective to recover therefrom a colored crystalline C_{60} .

223. (Previously Presented) The process according to Claim 222 wherein the pressure is less than 1 atmosphere pressure.

224. (Currently Amended) The process according to Claim 223 wherein the pressure ~~is~~ is greater than about 50 torr.

225. (Previously Presented) The process according to Claim 224 wherein the pressure ranges from about 50 torr to about 400 torr.

226. (Previously Presented) The process according to Claim 222 wherein C_{70} is additionally present in the sooty carbon product.

227. (Previously Presented) The process according to Claim 222 wherein C_{70} is additionally present in the sooty carbon product and is additionally separated from the sooty carbon product and is present in the crystalline C_{60} .

228. (Previously Presented) The process according to Claim 227 wherein the C_{70} is separated from the crystalline C_{60} .

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229. (Previously Presented) The process according to Claim 222 wherein the crystalline C₆₀ is purified crystalline C₆₀.

230. (Currently Amended) A process for preparing C₆₀ comprising vaporizing elemental carbon selected from the group consisting of graphite, amorphous carbon and glassy carbon in an inert quenching gas at a pressure of at least 50 torr so as to generate a carbon soot comprising C₆₀ and separating said C₆₀ from said soot under conditions effective to recover purified ~~substantially pure~~ crystalline C₆₀ therefrom.

231. (Previously Presented) The process according to Claim 230 wherein the pressure ranges from about 50 torr to about 400 torr.

232. (Currently Amended) A process for preparing C₆₀ comprising:

(a) vaporizing elemental carbon in the presence of an inert quenching gas under conditions effective to form a sooty carbon product comprising C₆₀ molecules in macroscopic amounts;

(b) depositing the sooty carbon product on a collecting surface remote from ~~said~~ situs of vaporization;

(c) removing the sooty carbon product from the collecting surface; and

(d) extracting a product comprising a macroscopic amount of C₆₀ from said sooty carbon product.

233. (Currently Amended) A process for preparing C₆₀ comprising:

(a) vaporizing elemental carbon in the presence of an inert quenching gas at a pressure ranging from less than 1 atmosphere up to a pressure of 10 atmospheres under conditions effective to form a sooty carbon product comprising C₆₀ in quantities sufficient to isolate C₆₀ as a solid when extracted from the sooty carbon product;

(b) depositing the sooty carbon product on a collecting surface remote from ~~said~~ situs of vaporization;

(c) removing the sooty carbon product from the collecting surface; and

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(d) extracting C_{60} from said sooty carbon product in quantities sufficient to isolate C_{60} as a solid when extracted from the sooty carbon product.

234. (Previously Presented) A process for preparing C_{60} comprising:

(a) vaporizing elemental carbon in the presence of an inert quenching gas under a pressure ranging from less than 1 atmosphere up to 10 atmospheres under conditions effective to form a sooty carbon product comprising C_{60} in quantities sufficient to isolate C_{60} as a discernible solid when extracted from the sooty carbon product;

(b) extracting C_{60} from said sooty carbon product in quantities sufficient to isolate said C_{60} as a discernible solid.

235. (Previously Presented) The process according to Claim 233 or 234 wherein said elemental carbon is placed into an evacuated reactor prior to the vaporization thereof.

236. (Previously Presented) The process according to Claim 233 wherein depositing comprises collecting the sooty carbon product on a collecting surface distanced 5-10 cm from said vaporization situs.

237. (Previously Presented) The process according to Claim 233 or 234 wherein the elemental carbon is vaporized in a bell jar carbon evaporator.

238. (Previously Presented) The process according to Claim 233 or 234 wherein extracting comprises contacting the sooty carbon product with a non-polar organic solvent effective to dissolve the C_{60} , said solvent being present in amounts sufficient to dissolve the C_{60} present in said sooty carbon product.

239. (Currently Amended) The process according to Claim 238 wherein said non-polar organic solvent is benzene, toluene, ~~carbon tetrachloride~~ carbon tetrachloride, 1,1,1-trichloroethane, xylene or an alkane having 5-10 carbon atoms.

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240. (Previously Presented) The process according to Claim 233 or 234 wherein C₇₀ is additionally present in the extracted C₆₀.

241. (Previously Presented) The process of Claim 240 which additionally comprises separating the C₇₀ from C₆₀.

242. (Previously Presented) The process according to Claim 233 or 234 which additionally comprises purifying the extracted C₆₀ product.

243. (Currently Amended) The process according to Claim 233 or 234 wherein the product is ~~substantially pure~~ purified C₆₀.

244. (Previously Presented) The process according to Claim 233 or 234 wherein extracting comprises subliming the C₆₀ from the sooty carbon product and condensing the sublimed C₆₀.

245. (Currently Amended) The process according to Claim 233 or 234 wherein the pressure of the vaporization is ~~conducted at a pressure ranging~~ ranges from 50 to 400 torr.

246. (Previously Presented) The process according to Claim 233 or 234 wherein the extracted product is in solution.

247. (Previously Presented) The process according to Claim 233 or 234 wherein said extracted C₆₀ product is in solution of a non-polar organic solvent.

248. (Currently Amended) The process according to Claim 246 247 wherein the non-polar organic solvent is benzene, toluene, carbon tetrachloride, 1,1,1-trichloroethane, xylene or an alkane having 5-10 carbon atoms.